CHAPTER 5

Conclusions

A National Strategy calls for habitat restoration on an unprecedented scale. We are now ready to undertake this new level of coastal and estuarine habitat restoration.

- Tens of thousands of people already participate in restoration activities through schools and community groups.
- Advances in restoration science have enabled countless successful restoration projects and an increased understanding of coastal and estuarine systems.
- All levels of government, from towns and counties, to state and federal agencies, are leading restoration efforts.
- The emerging industry of restoration is ready to be engaged.

The findings and recommendations presented here provide a framework for a coordinated and consistent response to the loss and degradation of coastal and estuarine habitat. This National Strategy is based on knowledge gained in prior decades, existing planning efforts, and the recognition that public and private interests must work together to achieve restoration goals.

A National Strategy provides all those concerned about the future of coastal and estuarine habitats with tools to set priorities and allocate resources to achieve our target – ensuring that we can achieve sustainable, productive and diverse coastal and estuarine habitats for present and future generations.

Restoration Planning in the Coastal United States

Common Elements

In the review of restoration plans within each region, many common elements were identified in terms of key habitats, species and threats, as well as common plan elements such as goals, methods and elements of successful restoration. The regional analyses also revealed many similarities among the regions and indicate similar needs for restoration and restoration planning throughout the United States.

Shellfish beds, marshes and intertidal flats were identified as key habitats in at least three of the regions reviewed. These habitats are critical to estuarine and coastal ecosystems and are important for many aquatic species. Several key species groups, including submerged aquatic vegetation, commercial and recreational fish, and migratory birds, were found in most of the regions reviewed. These species use estuarine and coastal habitats as nesting and nursery grounds, and play an important role in the economy of many coastal communities. Key threats (past, present and future) identified in all the regions include: direct habitat alteration; point and nonpoint source pollution; invasive species; sea level rise; resource harvesting and extraction; subsidence; and modification to hydrology.

The restoration plans reviewed for each region also revealed similar goals, methods, elements of success and information needs among the regions. Common restoration goals include restoration of lost or degraded habitat and function, formation of partnerships and cooperative efforts, development of a strong scientific basis for restoration, setting regional priorities, developing plans with an ecological approach, enhancement of public education and outreach efforts, and utilization of best available science and technology. Common restoration methodologies were found in restoration plans from several of the regions reviewed. These methods include eradication of nuisance species, removal of fill, creation of fish passages, construction of shellfish beds, and the transplantation of submerged aquatic vegetation from nurseries or existing seagrass beds.

The success of restoration projects can be attributed to a number of key factors. Several restoration plans from different regions identified similar elements of success, including effective partnerships, education and outreach efforts, availability of adequate and sustained funds, use of best available technology, implementation of scientifically sound monitoring protocol, use of defined success criteria, and a standard tracking system. In most of the regions, plans acknowledged coordination and connectivity among restoration planning and programs, but there is a need to encourage and build on what is already being done. In all of the regions, many of the most successful restoration projects were those that were part of an overall watershed-wide plan.

The science of restoration is still evolving and growing. Many of the regions identified similar information and research needs to expand the body of knowledge that exists today. Information needs range from basic information regarding ecosystem structure and function and an assessment of current status and needs to the effects of habitat alterations. Many regions identi-

fied a need for better definitions of success for monitoring and evaluation of projects. In addition, a need was identified for prioritization of critical habitats and restoration needs, as well as an effective means of information synthesis and transfer.

Unique Findings

The review of restoration efforts across the United States also revealed some significant differences in the level of restoration planning in different regions. In some regions, extensive regional and subregional plans were identified, while other regions were found to be in the very beginning stages of planning.

Although regional estuarine restoration planning is still developing in the Pacific Northwest, examples of regional planning are the Salmon Recovery Plan in Washington and the Lower Columbia River Estuary Plan for Oregon and Washington. Plans also exist for individual estuaries and sub-basins. A national estuarine restoration strategy and federal funding would contribute significantly to the development and implementation of comprehensive regional estuarine restoration strategies.

California has several regional restoration planning efforts, including San Francisco's coastal zone management effort and Southern California's Wetlands Recovery Restoration Strategy. In the Pacific Islands, there are very few comprehensive restoration plans for estuarine habitats. This absence of planning is alarming because the populations of these islands are increasing at an extremely high rate and the majority of the populations inhabit coastal areas. Several government agencies are gathering baseline data that would allow planning efforts to proceed.

Several excellent programs and plans have been developed for restoration of the Gulf Coast. The Gulf of Mexico Program provides an example of the effective use of partnerships in restoration efforts. This program is a partnership of 18 federal agencies, state agencies from the five Gulf sates, and diverse public and private organizations. The Coast 2050 plan is a strategic plan for the survival of Louisiana's coast and coastal communities and promotes restoration and protection on a coast-wide basis, involving federal, state, and local entities as well as landowners, environmentalists and scientists.

In the Southeast Atlantic region, restoration programs and plans are being primarily implemented as regional or state-strategies. A review of restoration plans and programs determined that there is significant duplication of effort within and among federal and state initiatives.

In the Northeast Atlantic region, planning and restoration efforts are underway from the Gulf of Maine to Chesapeake Bay to restore the health of the estuaries. A variety of federal, regional and state plans have been developed to address habitat restoration issues. Local entities, including city and county governments, nonprofit conservation organizations and other community groups also are participating in many successful restoration planning efforts.

In the Great Lakes region, it is important to note that coastal wetland restoration planning as a whole is still in the beginning stages. Most coastal wetland planning efforts are conducted as part of broader ecological efforts. Many estuarine systems have only recently been formally identified as target areas for protection or restoration by agencies or nongovernmental organizations. Additionally, there are many coastal wetland areas that have been researched and inventoried, or identified as needing restoration, but have yet to undergo formal restoration or management planning.

Findings and Recommendations

■ Habitat Restoration

Finding

Estuaries are uniquely productive natural systems that perform vital and irreplaceable ecosystem services. Healthy estuaries are crucial to continued economic and ecological prosperity. Taking action to restore these vital resources will provide long-term benefits.

Discussion

Healthy estuaries and coastal habitats contribute to our economic base through tourism, recreational and commercial fishing, aquaculture and other income-producing business sectors. Healthy coastal habitats such as wetlands and riparian forests trap sediment and nutrients and serve as a buffer to protect communities from devastation caused by flooding. By restoring function to these important habitats, we can restore the invaluable services they provide. Coordinating restoration activities in the same watershed or estuary enables evaluation of overall benefits to the ecosystem.

Recommended Action

Implement coordinated restoration projects to provide healthy ecosystems that support wildlife, fish and shellfish; improve the quality of surface water and ground water; enhance flood control; and increase opportunities for outdoor recreation.

■ Restoration Partnerships

Finding

Participation and coordination among diverse public and private groups is a necessary component of successful restoration. More than sixty federal programs are equipped to play a role in habitat restoration, and dozens of state and local programs and nongovernmental organizations are actively restoring habitat.

Discussion

In order to maximize effectiveness at the federal, state and local levels, public and private restoration partnerships need to be created and implemented. Restoration plans should encourage partnership development among diverse stakeholders and include a high degree of hands-on community involvement. Sharing and disseminating effective models for program coordination will encourage new and stronger partnerships.

Recommended Action

Create and maintain effective restoration partnerships that include diverse public and private organizations and agencies to maximize effectiveness at the federal, state and local levels.

■ Restoration Planning and Priority-Setting

Finding

There are substantial gaps in estuarine habitat restoration planning in every region of the coastal United States. In many estuaries, no planning effort has focused directly on estuarine habitat restoration.

Discussion

Approaches to estuarine habitat restoration will vary according to specific local and regional needs, including loss of historic habitat and associated values, and current priorities and goals. On-the-ground restoration projects are most effective when they are part of a larger planning effort that sets goals and priorities. In order to promote regional approaches to restoration planning and evaluate the success of existing regional restoration planning efforts, regional workshops should be held with representatives from agencies and organizations engaged in restoration.

Recommended Action

Use the Regional Analyses and planning frameworks in *A National Strategy* to take the next step in habitat restoration planning in each estuarine and coastal region of the United States. In most cases, this will include completing coastal and estuarine habitat restoration plans. This action should not preclude or delay restoration action in coastal and estuarine habitats. The knowledge, skills and technologies exist to make substantial improvements in the near term.

■ Science and Technology

Finding

The best available restoration science and technology is required for successful project design, implementation and monitoring. In every coastal region of the United States, more information is needed on how to best restore the basic functions of habitat.

Discussion

Research on restoration science and technology is ongoing, and restoration planning and projects should reflect this changing body of knowledge. Coastal regions have much to offer one another in terms of innovative and successful approaches to restoration. It is important to develop a mechanism for broad distribution of information and share lessons learned in the field of restoration. Technical guidance is needed on restoring priority habitats, potential benefits and drawbacks of recommended restoration techniques, monitoring plans, and measures for evaluating project success. Sharing information on restoration case studies, applied restoration techniques and measures for evaluating project success on a regional and a national scale also is recommended.

Recommended Action

Apply the best appropriate restoration science and technology in project design and implementation.

■ Evaluation and Monitoring

Finding

Evaluating progress in coastal and estuarine habitat restoration at the project, estuarine and national scales is essential to long-term success.

Discussion

Through project monitoring and tracking of progress at the watershed level, restoration program managers and practitioners can assess the effectiveness of their efforts and incorporate new information and techniques in project design and watershed-level priorities. In order to evaluate the success of restoration planning, regional workshops should be held with representatives from agencies and organizations engaged in restoration and planning to identify existing gaps in information, develop mechanisms for information exchange, and highlight successful techniques and partnerships.

Recommended Action

Regularly evaluate progress toward restoring function to coastal and estuarine habitat to determine whether the approaches in *A National Strategy* are making a difference. A national database with regional focus should serve as a tool for restoration practitioners and managers to assist in evaluation.

■ Outreach and Education

Finding

The restoration and maintenance of healthy estuaries will require the long-term support of a broad cross-section of the public, including those who live on or near the coast and those who live inland.

Discussion

Successful restoration efforts require an informed public willing to support the policies, funding and changes in lifestyle necessary to restore and maintain estuaries as healthy and productive ecosystems. Local stewardship will facilitate long-term conservation and success at these restoration sites.

Recommended Action

Facilitate community and volunteer involvement in construction, maintenance and monitoring of coastal and estuarine habitat restoration projects.

■ Funding

Finding

The Estuary Restoration Act of 2000 authorizes $275 million over five years for estuarine habitat restoration projects and calls for leveraging existing public and private resources to maximize the effectiveness of restoration efforts.

Discussion

The Estuary Restoration Act provides an excellent opportunity to fund restoration activities that otherwise would go unfunded. Sufficient funding, both public and private, should be made available to implement restoration planning activities, on-the-ground projects, monitoring and outreach measures recommended in the Act. Because estuaries provide substantial benefits to the regions in which they are located, governments at all levels should demonstrate strong support for estuarine restoration. Funded restoration projects should be cost-effective, technically feasible, scientifically sound and address restoration priorities in their local, regional and national plans.

Recommended Action

Fully fund the Estuary Restoration Act of 2000 and maintain or increase existing state and federal funding sources.